Evaluation of the Associate of Applied Science / Fire Science Degree

Program:

Lewis and Clark Community College, Godfrey, Illinois

Strategic Management of Change

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ABSTRACT

The Fire Science-Associate of Applied Science [AAS] degree program at Lewis and Clark Community College, Godfrey, Illinois [LCCC], is intended to be a career enhancement opportunity for firefighters. It is where they can gain the knowledge necessary to perform those duties demanded of them. The problem, as perceived by the college administration and the focus of this research, was the low graduation rate of the AAS degree program. The college instituted program revisions five years earlier and substantial increases in enrollment were achieved, however, there was essentially no increase in graduation rate. The purpose of this research was to evaluate the AAS degree program and discern elemental causes of the low graduation rate, with program revisions dependent upon findings.

Evaluative case study methodology was employed in the research with a quantitative analytical approach to answering the following six questions:

- 1) Who attends the LCCC Fire Science program and which students graduate?

- 2) How would increased incentives for program graduates affect student persistence in completing an AAS degree?

- 3) Do a) Fire service administrators, and...b) Students of the fire sciences feel their educational needs can be met by alternatives to an AAS degree?

- 4) Are the LCCC educational district fire services satisfied with the LCCC Fire Science program?

- 5) Is regard for higher education of the LCCC educational district Fire Chiefs affected by personal education level and is this regard reflected in department training requirements?

- 6) Does program graduation enhance the career opportunities for members of the LCCC fire service community?

Data collection was accomplished through slightly differing survey instruments with overlap of questions regarding key variables of research. The groupings for survey distribution were active students, inactive students, graduates, and administrators of fire departments having had some affiliation with the program.

Results revealed most participants to be adult learners and almost exclusively white males. Program graduates were found to be overwhelmingly, paid professionals.

Satisfaction rating among all survey respondents was found to be 75%. Inactive students contained the largest dissatisfied group at 20%. Dissatisfaction level across all respondents was only 10%.

All survey groups thought increased incentives in the local fire services would increase graduation rate of the AAS degree program. Professional status, however, was the determining factor as to the measure of support for different incentives. Paid personnel considered salary and promotional incentives most important, while volunteers thought more of hiring preference being given to program graduates.

As for other forms of education being a viable alternative to the AAS degree, 100% of the inactive students were agreeable. Disagreement was highest among Fire Chiefs and graduates, with both over 50%.

The personal education level of LCCC educational district Fire Chiefs was found to have a significant bearing on their regard for higher education. This regard for education, however, had no effect on departmental training requirements. Fire Chiefs professed the benefit

of the AAS degree and thought little of the viability of its replacement with other forms of education. Yet, with one exception, it was not a requirement at any level of department hierarchy.

Research of career enhancement opportunity gained by graduates was inconclusive. Initial analysis of the effect of graduation on rank was very promising. The introduction of longevity in the analyses, however, obscured benefit derived from program graduation. The effect of holding an AAS degree was not identifiable in this study.

Few changes in the LCCC Fire Science program were recommended with no curriculum changes suggested.

More easily obtained than the AAS degree, and, including the same core regimen of courses, is the college's Certificate of Proficiency. Individual courses required for this certificate also carry the Illinois State Fire Marshal [OSFM] certifications. Program participants and inactive students considered these a viable alternative to the AAS degree. In the interest of furthering local firefighter education, it was recommended an aggressive marketing campaign be developed for this segment of the college's program.

Recommended also, was a concentrated effort in the recruitment of women and minorities into the Fire Science program.

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INTRODUCTION

The research setting was the Lewis and Clark Community College (LCCC) educational

facility at Godfrey, Illinois, a two year institution of higher learning. More specifically, it was the

Fire Science program within the Career Programs-Applied Technology Division of the

organization. Figure 1 illustrates the LCCC organizational chart with the position of the Fire

Science program coordinator shaded.
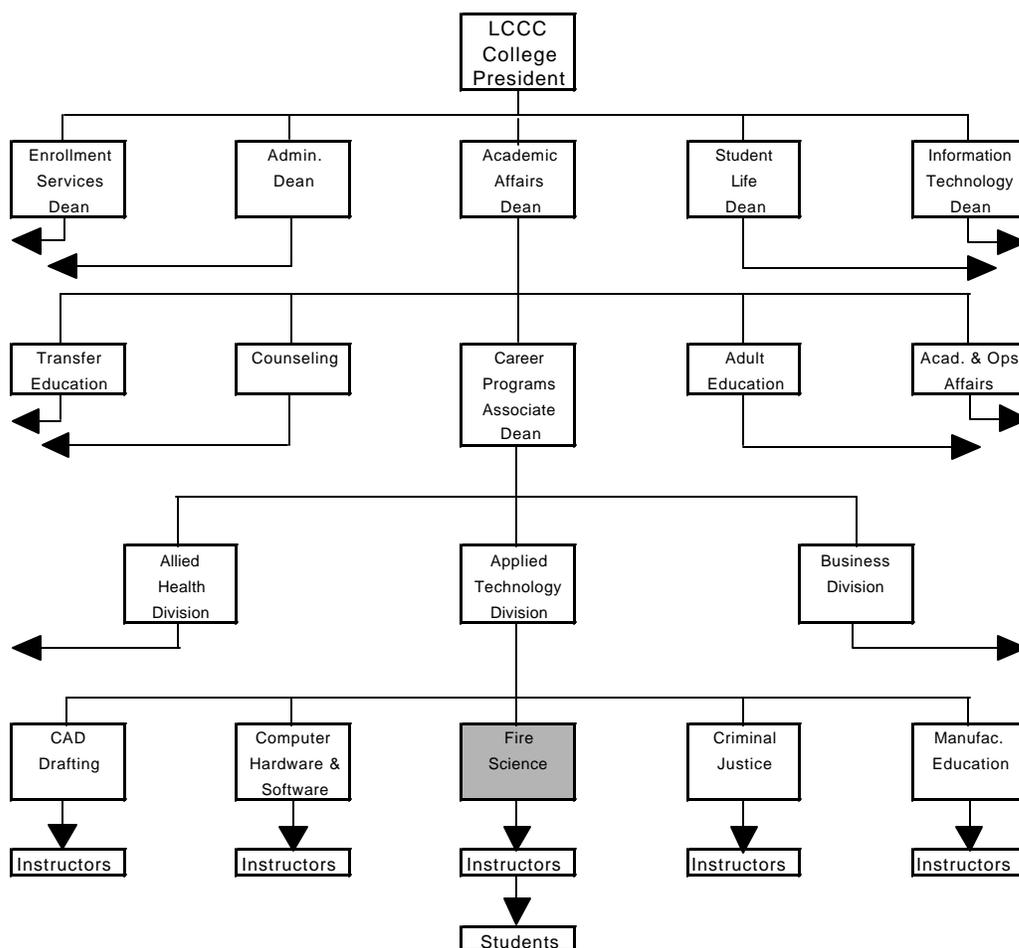
Figure 1. Abbreviated organizational chart of LCCC depicting the Fire Science program administration.

The Fire Science program at LCCC started in the early 1970's, not long after the college first came into existence. The program offers both an Associate of Applied Science (AAS) degree and a Certificate of Proficiency for students interested in the pursuit of a fire service or related career.

The problem within this setting, and focus of the research, was the graduation rate of the two year AAS degree program. Although participation was thought by the LCCC administrators to be satisfactory, it was believed by them that the graduation rate of the program was low.

The purpose of this research was to evaluate the Associate of Applied Science-Fire Science degree program. Required by the State of Illinois every five years, the program at LCCC was due for an evaluation at the time this project was initiated. The study attempted to identify underlying factors contributory to the graduation rate of the AAS degree program. Its purpose was to provide LCCC administrators with information for use in making decisions regarding possible program revisions.

Information revealed in this project was also intended for the use of fire service employees and prospective employees in making clarified decisions regarding educational and career opportunities. For this reason the research attempted to discern advantages of graduation from the AAS degree program and comparisons were made with alternative forms of training and education.

In order that better informed decisions be made regarding the education of firefighters, the results of this study were made available to all organizations that participated.

The research was evaluative case study in methodology with a quantitative analytical approach used in answering the following questions:

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- 2) How would increased incentives for program graduates affect student persistence in completing an AAS degree?

- 3) Do a) Fire service administrators, and...b) Students of the fire sciences feel their educational needs can be met by alternatives to an AAS degree?

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BACKGROUND AND SIGNIFICANCE

The last five year evaluation of the LCCC Fire Science program was for the years 1988-92. It revealed that the graduation rate of the AAS degree program averaged two students per year during that time. In 1988-90, program enrollment had fallen to an average of 18 students per year. Subsequent to a revision of the program curriculum and introduction of the reforms, enrollment more than doubled. For the years 1990-92, the enrollment figures averaged 45 students. Despite increased enrollment, no significant increase in the graduation rate was achieved (Lewis and Clark Community College [LCCC], 1993).

This evaluation and research project included the years 1992-97, fulfilling the Illinois State required program review. During this time, enrollment increased to an average of 130 students per year, however, 70 students has been the average the last two years. This increased enrollment ranges from 288% to 666% over a low of 18 students in 1990. During the same five year span, graduation rates have increased from two students per year, to an average of 2.8 (Lewis and Clark Community College [LCCC], 1996), representing an increase of less than 50%.

Persons well educated in their chosen field of endeavor certainly stand a better chance of succeeding at those endeavors. This is no less true for the fire service. What would be the response of the general public if asked their preference of educated or uneducated emergency response personnel when a human life may weigh in the balance? The importance of well trained and better educated firefighters cannot be understated.

The safety of the public and the firefighters themselves improves with advanced knowledge in emergency response and mitigation. The modern fire service does much more than simply extinguish fires. It is all encompassing in the arena of emergency services. Hazardous materials, advanced life support technologies, confined space and heavy rescue, fire prevention practices, and building code enforcement are crucial functions, in addition to firefighting, that the modern fire service performs.

The AAS degree program at Lewis and Clark Community College is intended to be a career enhancement opportunity for firefighters. It is where firefighters can receive the knowledge necessary to perform those duties that are required of them. The continued success of the AAS degree program is critically important to the communities in which these firefighters serve. A less than effective program should not be tolerated by college or fire service administrators, community

leaders, or the general population served by the LCCC educational district (J. Sowders, personal communication, March 1997). This project was intended to identify factors elemental to the graduation rate of the AAS degree program, for the purpose of improving the education of public safety service providers.

As taught by the National Fire Academy, and stated in their Strategic Management of Change: Student Manual, the first crucial step in change management "involves analyzing the existing situation and assessing what changes need to be made" (United States Fire Administration [USFA], 1996, p.2-3). In accordance with these teachings, the college administrators were taking the initial step in successful change implementation. This research project was an analysis of the current LCCC program. The LCCC administration sought to identify factors contributory to the seemingly low graduation rate of the AAS Fire Science program. A determination would then be made as to what action should be taken in correcting any inherent problems of the program. Their intent was to facilitate better problem resolution through formal analyses.

REVIEW OF THE LITERATURE

This section of the research will review the relevant work of other researchers. It begins with a historical perspective of community college role development, continuing with the need for higher education in the fire service, and the characteristics of the typical program participant. The section concludes with a review of various fire science program evaluations.

Although the graduation rate of the Fire Science program was the focus of this research, it is important to point out that this was a perceived problem. Quite possibly the program is

successful without graduating students with an AAS degree. Perhaps the college already accomplishes its intended role.

Role Definition of the Community College

The literature review began by looking at the question of vocational-technical (vo-tech) training versus academic education in community colleges in general, in order to gain a better understanding of its repercussions on LCCC. Is it the role of the community college to graduate transfer students to four year institutions, graduate two year terminal program students, or simply provide necessary technical skills training whereby persons may achieve a marketable level of proficiency? It was discovered this question is not unique to LCCC, nor to the fire service. In fact, it has existed in the two year, higher education institutions since their beginning.

The history of the community or junior college since its inception has been marked by the need to define the role it would play in higher education. It was the Morill Act of 1862 and the subsequent Second Morill Act of 1890 that laid the foundation of today's modern community college. These acts provided the base upon which federal aid to higher education has since rested and opened the door to a more democratic system of education in America. With these acts came the possibility of higher education for our nation's general population. With the land grant institutions formed by them, began the debate of what subjects should be included in higher education and who should attend college. It was the beginning of the debate over practical versus liberal education and the role of the two year institution (Vaughn, 1985).

In a historical documentary of the community college movement, T. Diener (1986) suggests that prior to the 1930's the community college role was primarily academic. Diener states, "The

dire economic conditions of the 1930's in the United States prompted the erection of 'emergency' junior colleges in a number of states. A unique quality of the developing junior college was its focus on meeting individual community needs" (p.117). Diener asserts that although the argument was not new, it was at this time that the community college began to focus on utilitarian rather than the academic needs of a changing nation.

All material of historical nature recognized the period after World War II and the activities of the Truman Commission on Higher Education as the era that ushered in the phenomenal growth of the community college during the 1960's and 70's. It was the return of thousands of our nation's military personnel from war, and the training needed to incorporate them into industrial post war America that initiated this expansion (Diener, 1986; Vaughn; 1985; Hardin, 1974). The Truman Commission played a significant part in community college development, a legacy of which was making higher education available to those other than the exceptionally bright or wealthy.

Higher education was found to have expanded over the last 100 years to encompass both academic and vo-tech education. It had become the role of the community college to provide this service to the community. This dual capacity was found to be exactly the posture taken by Lewis and Clark Community College, as revealed in a review of the college's catalogs of recent years.

The mission statement of LCCC, contained within the catalog of courses offered in school year 1987-88, distinctly divided the provision of both academic and vo-tech education and contained statements professing that both would be a goal of the institution (LCCC, 1987). In the 1997-98 catalog, however, the two were combined in a generic statement by the college. In this latest issue it simply states, "The college will provide programs and services in response to community needs and desires" (p. 2). The mission statement also contained the following passage:

"Formal education is not an end in itself; it supports a learning to learn process which continues throughout life. Learning most effectively occurs when theory and practice are integrated" (LCCC, 1997, p. 2). Although the wording is different and the separation of academic versus vo-tech was more distinct in the earlier version, the latter provides for the same dual role of the college.

Not all the literature found in this review agreed that the two year educational institutions have a firm understanding of their role. As recently as 1992, in a survey of Public Safety curriculum educators in California, it was discovered that 37% of community college educators viewed their mission as that of providing applied or vo-tech education. Only 56% viewed their role as providing a combination of both vo-tech and academic education (Hilligoss, 1992). More recently, Roth (1996), when discussing adult education in an issue of America stated:

> There are problems, too, that the institutions themselves have to face. Will it be job oriented or will it embody a wider educational vision? This decision will determine the institutions [sic] curriculum, the rigor of its programs and courses, and the kind of students it wishes to attract. (p. 10)

This dilemma of academic versus vo-tech arose repeatedly in all segments of the literature review. With the long debate over academic education versus practical training, it is no small wonder that it persists in the Fire Science program at LCCC today. This history lends some insight to the quandary created by the low graduation rate of the LCCC Fire Science program. Is it better to hold an Associate's degree in the fire sciences that would perhaps lead to furthering one's educational pursuits, or should a student pursue specific certifications to build a resume and career...academic or vo-tech?

In attempting to answer the question of academic versus vo-tech education as it pertains to the fire service, a review of the educational needs of the fire service in general is relevant.

The Need for Higher Education in the Fire Service

It was at the first Wingspread Conference in 1966 that fire service leaders from around the nation attempted to outline the role of formal education in the fire service. Post-secondary education degrees were suggested for levels of fire service hierarchy with increasingly educated personnel at each step up the ladder. It was suggested that entry level personnel be educated through "in house" training and vocational schools. Junior officers and technicians were to have education at the Associate's degree level through community colleges and technical institutes. Chief officers were recommended to hold a Bachelor's degree from college and university studies (Clark, 1993).

Ten years later, at the second Wingspread Conference of 1976, higher education in the fire service was again discussed, with two major revisions. Developed at Wingspread II was an educational model containing a second leg. The model included a path for the private sector of fire protection engineering. Furthermore, both the fire service and private sectors included graduate school education at the top levels (Clark, 1993).

Although these conferences have guided the nation's fire service closer to becoming a true profession by its becoming increasingly education and research oriented (Clark, 1993), they were not a cure-all for its educational problems. In the 1992 survey performed in California, it was discovered that the State Fire Marshal's Office, in accordance with the Wingspread outline, had well developed guidelines for firefighter training. Many community college curriculums, however,

had been developed with no reference whatsoever to the guidelines. The study also revealed that there was virtually no articulation between two and four year institutions of higher learning regarding fire service education (Hilligoss, 1992).

The overwhelming majority of literature reviewed asserted that attainment of an Associate's degree was both necessary and valuable for the career of firefighters and the future of the fire service (Cantor, 1995; Conklin, 1994; Clark, 1993; Kirtley, 1989). The literature also suggested that higher education was the path to "supervisory, managerial, and administrative positions" (Kirtley, 1989, p. 57). Cantor (1995), contended it is the minimum education level needed for future firefighters. Although professing a minimum educational requirement for entry level firefighters as being "in house" or vo-tech training, Clark (1993) maintains, "if the fire service is to survive and prosper in the next century, fire chiefs must lead the way by recognizing higher education's importance for their profession and for themselves" (p. 50).

In a survey of city managers conducted in research for the National Fire Academy, it was found that the desired qualities they seek in the hiring of fire chiefs are, leadership, people management skills, and the ability to communicate clearly. Also, the majority of chiefs hold an Associate's degree, with those in major metropolitan fire departments being more likely to hold a Bachelor's degree (Mras, 1994).

Fire Science Students: The Non-traditional Adult Learner

A comprehensive evaluation of Fire Science programs conducted throughout Florida found that the majority of fire science students are employed as paid firefighters and attend school part-time (Florida State Board of Community Colleges [FSBCC], Florida State Treasurer's Office,

Florida Department of Education, & Florida State Fire Marshal's Office, 1989). This finding is consistent with the program at LCCC. The majority of LCCC participants are adult students, a reflection of most fire departments within the LCCC district requiring entry level personnel to be 21 years of age and the time required to complete a degree attending college part time (J. Sowders, personal communication, May 1997). Although the literature revealed the non-traditional adult student is in no way unique to the study of fire science, the majority of program participants are adults. What then, is the motivation of the adult student? Why are they important to today's educational institutions? And further, why do they persist in educational pursuits...or not?

Research indicates that no period of learning in life is more important than another. Learning does not cease shortly after adolescence as once was thought to be the case. What was once thought to be a natural progression of student, worker, and family has considerable variation (Rybash, Roodin, & Hoyer, 1995; Hanniford and Sagaria, 1994). In addition to research confirming that adults are capable of college level study is the fact that they are returning to school in ever increasing numbers. Adults now comprise 50% of the student population in both two and four year institutions (Walmac, 1997; Roth , 1996; MacKinnon, 1994).

With the phenomenal influx of the non-traditional student into our nation's academic institutions over the last twenty years, these students have become critically important to higher education. A group that constitutes 50% of the student population inherently carries with it major economic impact. Adult student recruitment and retention is instrumental in the fortunes of all colleges and universities. They are especially important for community colleges that have "open admission policies and a greater concentration of part time students" (Luckie & Bonham, 1991, p.7). Differences in the traditional and non-traditional student need to be taken into account when

considering student persistence in degree completion. A disregard of these differences will have negative effects on their recruitment and retention (Cini & Fritz, 1996).

The literature revealed that the non-traditional student is highly motivated upon entry or return to educational pursuits...more so than the traditional college student (Roth, 1996). In addition they were found by Cini and Fritz (1996) "to be more motivated by academic than social factors" (p. 5). They also concluded this motivation stemmed from adults being more career focused than their traditional counterparts. The non-traditional student also has a heightened awareness of return for their investment. They expect a fair exchange of gain for expenditures necessary in their educational pursuits. Without some sense of dividends, adults simply will leave an unrewarding atmosphere in pursuit of other interests (Cini & Fritz, 1996; MacKinnon, 1994).

In addition to findings that the educational experience must be rewarding, the research of Luckie and Bonham (1991) found time (43.1%) and money (42.6%) to be major contributing factors for adults discontinuing their education. Their research found, however, life's circumstances was the most common reason for dropping out, with two out of three survey respondents listing a reason in this category.

Hanniford and Sagaria (1994) indicated that high dropout rates may not be the problem educational institution administrators perceive them to be. Their report to the American Educational Research Association implied that student dropout rates, particularly in the community colleges, can be very misleading. It was found that many students enroll at community colleges for purposes other than degree completion, discontinuing attendance upon achieving some lesser goal. These students, termed "opt-outs," are mistakenly included in overall drop-out rates (Hanniford & Sagaria, 1994; Luckie & Bonham, 1991).

Previous Program Evaluations

In searching for previous Fire Science program evaluations, several were found to have highly successful placement figures. It seemed institutions were very willing to promote their program as being successful by quoting placement figures. None of the institutions claiming successful programs, however, included dropout rates. Additionally, none of the evaluations were found to include program enrollment totals from which percentages graduated per year could be ascertained. Only the Florida study (FSBCC, et al., 1989) reported pre-enrollment employment status of participants. For these reasons, the claims of the institutions found to have investigated their own placement success rates may be somewhat misleading. Still, the evaluations discovered were very promising in terms of success.

An evaluation of the Johnson County Community College program offered in the Overland Park, Kansas area cited favorable placement figures for graduates. The study revealed that 88% of respondents to short term follow-up, and 91% of long term respondents contacted, were working in jobs related to Fire Science (Conklin, 1994). A similar follow-up of fifteen 1994 program graduates in Rhode Island, also revealed very favorable results for degree holders. Twelve were full time employees, two were continuing their education and one did not respond (Community College of Rhode Island [CCRI], 1994).

The Miami-Dade Community College, in a study conducted from 1983 through 1989 enjoyed highly successful results. It was interesting that this school offered both an

Associates degree in Fire Technology and another in Fire Service Administration. Over the five year period, of the 120 students opting for the technical degree, one hundred twelve (93%) were successfully placed. Administrative students were far fewer in number. In five years only 13

opted for administration, however, all of those who were graduates holding the Fire Service

Administration degree were working in the related field (Baldwin, 1989).

Kirtley (1989) suggested that AAS degree programs should be tailored to accommodate

persons wanting to attain managerial and administrative positions in the fire service. Perhaps given

the number of students opting for the fire technology versus the administrative degree in the Miami-

Dade study, this would be unwise. He further addressed the need for these programs to be

articulated with four year degree institutions for students desiring to continue educational pursuits.

As mentioned earlier, the survey by Hilligoss (1992) found that articulation is a major problem in

fire service education.

The Florida statewide study concluded that the average time for degree completion was

four years since most students attended part time (FSBCC, et al., 1989). This was time in

continuous attendance and did not make allowance for what Luckie and Bonham (1991) referred

to as "stop-outs," students returning after an absence from enrollment for a semester or more.

The LCCC Fire Science Program

The Fire Science program at LCCC began in the 1970's, not long after the college first

came into existence. It offers both an AAS degree and Certificate of Proficiency.

When the current program coordinator, John Sowders, secured the position in 1990, there

were significant changes made in the program curriculum. Changes in the overall curriculum were

intended to set a higher standard of academic excellence in the degree program. Some of the

previously required courses for attainment of the AAS degree were: English, Humanities, and

Social Science electives. Added to the curriculum were: Algebra, Chemistry, and Technical

Report Writing. The intent was that students would have a sense of accomplishment upon

graduation and the degree carry some meaning for those intending to continue educational pursuits.

There were also changes in the required fire science core courses. The program review of

the middle 1980's revealed program participation had fallen. In an attempt to increase enrollment,

course objectives were rewritten following those outlined by the Office of the Illinois State Fire

Marshal (OSFM) for state certification in given areas of study. The OSFM program of

certification is widely recognized throughout the State of Illinois as an excellent form of fire service

training. With the changes, students could receive the state certification in the area of course

coverage upon completion of individual courses. The intention of the revision was to boost

enrollment figures by the added incentive of certifications gained from the state. As previously

mentioned in the problem history section, enrollment figures for 1990-92 more than doubled that of

the years 1988-89 with even greater increases in the subsequent five years. The problem is that

graduation rates have remained stagnant (LCCC, 1993; personal communication, J. Sowders,

October 1997).

<u>Summary</u>

The literature review began with a historical perspective of the community college and its

struggle with role definition. Historical information revealed a long debate over the question of

academic versus vo-tech education. Discovered in the review was that the community college role

has become dual purpose, filling both academic and vocational needs (LCCC 1997, 1987; Diener,

1986; Vaughn, 1985; Hardin, 1974). Still, disagreement persists over the community college role

yet today (Roth, 1996; Hilligoss, 1992). This debate was relevant to the dual role mission

statement of LCCC. If the Fire Science program meets community educational needs, it would be successful despite the current graduation rate.

Important to this study also, were the educational needs of the fire service. Meeting the educational needs of the fire service in a college's district determines program participation (Roth, 1996). It was interesting to find opinion on fire service educational needs varied considerably. The debate once again centered on academic versus vo-tech. All the literature viewed a degree as necessary for those wishing to advance into supervisory and administrative positions (Kirtley, 1989; Clark, 1993; Conklin, 1994; Cantor, 1995) and the majority of chief officers were found to be degree holders (Mras, 1994).

As student persistence in completing an AAS degree was fundamental to this study, a profile of program participants was appropriate. The literature revealed the typical student to be non-traditional and affiliated with the fire service prior to enrollment (Sowders, 1997; FSBCC, et al., 1989). Researchers have found non-traditional adult students to be highly motivated and career focused (Roth, 1996; Cini & Fritz, 1996) while also expecting a fair exchange of gain for effort (Cini & Fritz, 1996; MacKinnon, 1994). These findings were notably relevant to the project. Perhaps this exchange of gain for effort is a problem at LCCC. If the typical student is motivated and career focused, then why do LCCC students fail to complete their degree?

Lastly, this review turned to other program evaluations. These evaluations reported highly successful programs in terms of placement rates, yet, they appeared limited in depth of study. In that the majority of program participants at LCCC are affiliated with the fire service prior to enrollment, placement rate of graduates might also prove to be highly successful. However, the

intent of this project differed slightly from evaluations reviewed. Although placement rates are important, this project attempted to focus on why students do not graduate from the program.

PROCEDURES

The objective of this research was identifying factors relative to the low graduation rate of the program. This was accomplished through the interpretation of data collected by the administration of four survey instruments. The data interpretation attempted to answer research questions chosen by the author.

The methodology of the research was evaluative case study. Evaluative case study research has become more common due to programs that receive government funding, with periodic evaluation required (Leedy, 1997). The case in this study was the LCCC Fire Science program.

The historical approach to case study methodology has been qualitative research. However, some studies are designed to resemble the more traditional quantitative methods. The determining factor of research style in case study methodology is the approach to data analysis. In his 1997 book, Practical Research: Planning and Design, P. D. Leedy contends that the interpretation analysis approach resembles that of the traditional quantitative style. In this style data analysis, the researcher adopts the use of quantitative techniques "attempting to describe and explain the phenomenon studied" (p. 158). This was the approach employed in this study.

Data Collection

Data were collected by survey instruments. The research target population contained distinct segments, and required survey instruments of four slightly different designs. Identical questions pertaining to the key variables of research were included on all designs.

The survey instruments were designed for ease of response. Most questions were answered by checking the appropriate response box. Included in the literature review of previous Fire Science program evaluations, were several appendices containing surveys. These were very beneficial in formulating the instruments for this study. The surveys used in the research are included in the appendices of this document.

A preliminary survey design was pilot tested on a group of students from Greenville College, Greenville, Illinois for evaluating their effectiveness. As a result, the original survey instruments were abbreviated, resulting in better emphasis on key research variables.

Population of the Study

The target population of the study were persons involved in fire service education in the LCCC educational district. Included were program participants, fire service administrators in the communities served by LCCC, and the coordinator of the program at the college. Although none of the information collected in interviews with the LCCC program coordinator was used in the analyses of data, it was invaluable in completion of the project.

The sample population of students was obtained by accessing the LCCC data base files for a listing of all program participants in the last six years. Records for students past that date were not on file.

Program participants were divided into three categories: 1) program graduates, 2) currently active students, and 3) inactive students. Active students were defined as those currently enrolled or having attended in the previous year. Inactive, were those students not having attended in this time period. This definition was formulated with the counsel of LCCC Program Coordinator John Sowders. It was his assertion that this time frame was not an unusual "stop-out" (Luckie & Bonham, 1991) for students. This was due to curriculum rotation time of required course offerings (personal communication, J. Sowders, January 1998).

The total number of student records accessed for the six years on file was 280. Of that number, 91 fell within the prescribed guidelines for active status.

The sample population of students currently enrolled was a census sample. The survey was distributed in classrooms to all students in attendance at the given sessions. Although this sub-group represented the smallest portion of non-graduate participants, response rate was anticipated to be the greatest of any group in the sample populations surveyed. Actively enrolled students surveyed totaled 38, and, was the only sample group not surveyed by mail.

The sample population of those considered active, yet not recently enrolled, was obtained from the LCCC data base listing by systematic random sampling procedure. From the data base list comprising this subgroup of active students, every fourth name was selected for survey by rolling a die as the determinant between the first four names. There were a total of 14 survey mailings in this group.

Inactive students comprised the largest group of program participants, however, it was predicted this group would have the lowest response. In order to obtain a meaningful number of respondents, it included a disproportionate ratio of the total sample population surveyed.

Again a systematic random sample was selected by die roll. Every third name was included, and 63 surveys were mailed to this group.

A search of LCCC archival records was performed, generating the most comprehensive list of graduates available. Ninety-one students had graduated with an AAS degree since 1972. Using a coin toss as determinant, every other name was selected. Three graduates were known by the researcher to be deceased and were omitted from the list. Forty-four surveys were mailed to this group.

Fire service administrators surveyed was a simple convenience sample. A list of 32 departments on record in the LCCC program coordinator's office was obtained. Extent of involvement in the program by these departments was not known. It was, however, a good cross-representation of types of departments within, and geographically spread throughout, the educational district of the college. Chosen as a purposeful and convenient sample, the Chiefs of these departments were surveyed by mail.

Plan of Analysis: Research Constructs

As suggested by Leedy (1997), the researcher took a quantitative analytical approach to the data collected. The underlying determinants of graduation rate were thought by the researcher to be many, with cumulative effect. The major constructs of the research centered on the six research questions.

All data for analysis were collected by the four survey instruments. The first set of analyses sought to establish a demographic profile of program participants and graduates for comparison. Survey respondents were grouped accordingly. Included in the program graduates were qualifying

respondents of the Fire Chiefs survey that may or may not have been respondents to the graduate

survey. The analyses for participants and graduates comparison is described in Table 1.

Table 1

Analyses of Student Demographics and Graduate Status

Variable	Data Type	Statistical Treatment
Age	Interval	Cross-Tabulation
Race	Categorical	Cross-Tabulation
Gender	Dichotomous Categorical	Cross-Tabulation
Fire Service Status	Dichotomous Categorical	Cross-Tabulation
Type of Department	Categorical	Cross-Tabulation
Professional Status	Dichotomous Categorical	Cross-Tabulation Chi-square

In seeking to detect if increased incentive for degree holders would increase student

persistence, survey respondents, regardless of activity status, were divided into two groups. Group

1 consisted of paid-professional firefighters including those working in combination departments

and Chiefs of departments. Group 2 contained firefighters other than professionals. Analyses of

incentives effects on persistence is presented in Table 2.

Table 2

Analyses of Respondents' Perception of Incentive Increase on Graduation Rate

Variable	Type of Data	Statistical Treatment
Increased Wages	Ordinal	Cross-Tabulation

Promotional Consideration	Ordinal	Cross-Tabulation
Hiring Consideration	Ordinal	Cross-Tabulation

The statistical analyses of alternative forms of education to the AAS degree meeting the LCCC educational district fire services training needs is outlined in Table 3. The grouping for analyses was by survey group.

Table 3

Analyses of Alternative Education vs. Degree Completion

Variable	Type of Data	Statistical Treatment
Benefit of OSFM Certifications	Ordinal	Cross-Tabulation
Benefit of Cert. of Proficiency	Ordinal	Cross-Tabulation
In House Training Meets Requirement	Ordinal	Cross-Tabulation
OSFM Viable Alternative to Degree	Ordinal	Cross-Tabulation

The analyses regarding the LCCC educational district fire services satisfaction with the Fire Science program is illustrated in Table 4. Survey category was the independent variable. Program satisfaction was treated as the dependent variable.

Table 4

Analyses of Respondents' Satisfaction With the LCCC Fire Science Program

Variable	Type of Data	Statistical Treatment
Program Satisfaction	Ordinal	Cross-Tabulation
Response Group	Categorical	Frequency Distribution

Analyses of a Fire Chief's education level, his regard for higher education, and the effects

this regard has on required levels of departmental training is presented in Table 5. Response to the

survey question of benefit derived from an AAS degree was used as basis of regard for higher

education. Initial investigation between the key variables was of correlation, followed by analysis

of covariance. An index of responses to training requirements by department hierarchy (the

dependent variable) was cross-tabulated with an index of regard for higher education (the

independent variable) based on Fire Chiefs' responses to benefit of the AAS degree. Held

constant, was personal education (the covariate) as either high or low using an AAS degree level of

education as the break point.

Table 5

Chief's Regard for Higher Education: Effect on Department Training Requirements

Variable	Type of Data	Statistical Treatment
Years of Education	Interval	Frequency Distribution Pearson's r ANCOVA
Regard for Higher Education	Ordinal	Pearson's r ANCOVA
Department Training Requirement	Ordinal	ANCOVA

Analyses of the effect of an AAS degree on career enhancement developed in two stages.

Initially the correlation between rank and degree holders was the focus of the analysis. However,

after a pilot test of the survey instrument, preliminary data analyses disclosed a certain correlation

between rank and years of fire service. The result of this finding was a refined and deeper study.

Included in the analyses were all survey respondents currently in the fire service. The

analyses assessed the effects of holding an AAS degree on a numerical index of respondents rank

(the dependent variable) while holding years of service as a constant (treated as a covariate).

Table 6 summarizes this set of statistical analyses.

Table 6

Analysis of Career Enhancement for AAS Degree Holders.

Variable	Type of Data	Statistical Treatment
Rank	Ordinal	Pearson's r ANCOVA
Years of Fire Service	Interval	Pearson's r ANCOVA
Degree Holder	Dichotomous Categorical	ANCOVA

Statement of Limitations

This research was based on all respondents understanding the survey questions and

answering them truthfully. The research made no attempt to find if this was a factual assumption.

It should be noted also that, with the exception of the Fire Chief survey, this study made no

contact with members of the fire service having not participated in the LCCC, AAS degree

program. Career enhancement of AAS degree holders was compared only in regard to other

survey respondents. Comparison of career enhancement of graduates versus all fire service non-

graduates within the LCCC district was not performed in this study. Inaccuracies in indications of career enhancement enjoyed by graduates are therefore possible.

In regard to effect of increased incentive on student academic persistence, the findings of this research were based solely upon respondents' answers to that portion of the survey instruments. The findings were meant to be an indicator for use of administrators of the LCCC facility. Determining the actual effect of incentives upon student persistence would require experimental research. Such was not the focus of this project.

Due to limitations of the statistical program software and shortcomings in survey design on the part of the researcher, all non-graduate group analyses included non-graduates of the fire chief survey. This oversight may have introduced some bias into certain analyses performed. It is the opinion of this researcher, however, that any introduction of bias in this form would not have affected significant findings.

Although the Fire Chiefs survey had a 35% return rate, this provided a sample population of only, n=11. For this reason, the analysis of the effect a chief officers regard for education has on his department training requirements could be considered statistically weak. The analysis did, however, include one-third of the departments that were found to have had some degree of participation in the LCCC program. Therefore, this analyses set was thought by the author to merit inclusion in the study.

To eliminate ambiguity, it should be noted that the enrollment totals reported by LCCC were based upon the sum of individual class enrollment figures. As a result, they were inflated from what proved to be the correct numbers. Data base processing by the researcher eliminated name

duplication from multiple class enrollment. The six year total reported in the research population of

the procedures section is the correct figure.

RESULTS

Thirty-eight of 43 active students participated in the in-class surveys: another 2 of 14

responded to mail surveys. Inclusive of all survey categories, mailings totaled 152. Eleven inactive

student surveys and one chief survey were returned as non-deliverable.

As expected, the inactive student group had the poorest response rate: 11 of 63 (17%),

responded.

Program graduates were, surprisingly, more willing to participate: 21 of 44 graduate

surveys (48%) were returned.

Eleven of 31 chiefs (35%) responded. Table 7 displays total survey respondent figures.

Table 7

Respondents by Survey Group Frequency

	N	
	Valid	Missing
Survey Group	84	0

Survey Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fire Chief	11	13.1	13.1	13.1
	Program Graduate	21	25.0	25.0	38.1
	Program Participant	41	48.8	48.8	86.9
	Inactive Student	11	13.1	13.1	100.0
	Total	84	100.0	100.0	
Total		84	100.0		

Attendance and Graduation

The first analyses were to profile who attends, and, who graduates from the AAS degree program. The response groupings were graduate and non-graduate. The age of graduates ranged from 24 years to 60 years with a mean age of 42 years (Mdn = 43, SD = 8.61, n = 27). The age of non-graduates ranged from 18 years to 55 years with a mean age of 32 years (Mdn =30.5, SD = 9.75, n =56) Of the non-graduate group, 71% were 25 years of age or over.

The overwhelming majority of attendees and graduates were found to be white males. Of the graduate group (n = 27), none were female, and only one was non-white (3.3%). The non-graduate group (n = 56) contained three females (5.6%) and one non-white (1.8%).

Graduates and non-graduates were next cross-tabulated with responses to the survey question asking if respondents were currently in the fire service (N = 84). Of the graduates (n = 27), 100% were in the fire service. Non-graduates responses (n = 57) revealed that 95% were currently involved in the fire service.

Respondents' department type proved significant in the graduate profile. Initial results disclosed a large number of graduates (66%) were from paid departments. This precipitated the

reduction of survey groups to paid professionals (including those on combination departments) and all others. This change made clear which students complete the program, c^2 (1, 84) = 26.748, p < .001: twenty-three of twenty-seven (85%) were paid professionals. The results are displayed in Table 8 and graphed in Figure 2.

Table 8

Chi-square Test: Paid-Professionals Cross-Tabulated by Graduate Status

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Graduate Status * Firefighter Status	84	100.0%	0	.0%	84	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.748[b]	1	.000
Continuity Correction [a]	24.356	1	.000
Likelihood Ratio	29.099	1	.000
Linear-by-Linear Association	26.429	1	.000
N of Valid Cases	84		

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.07.
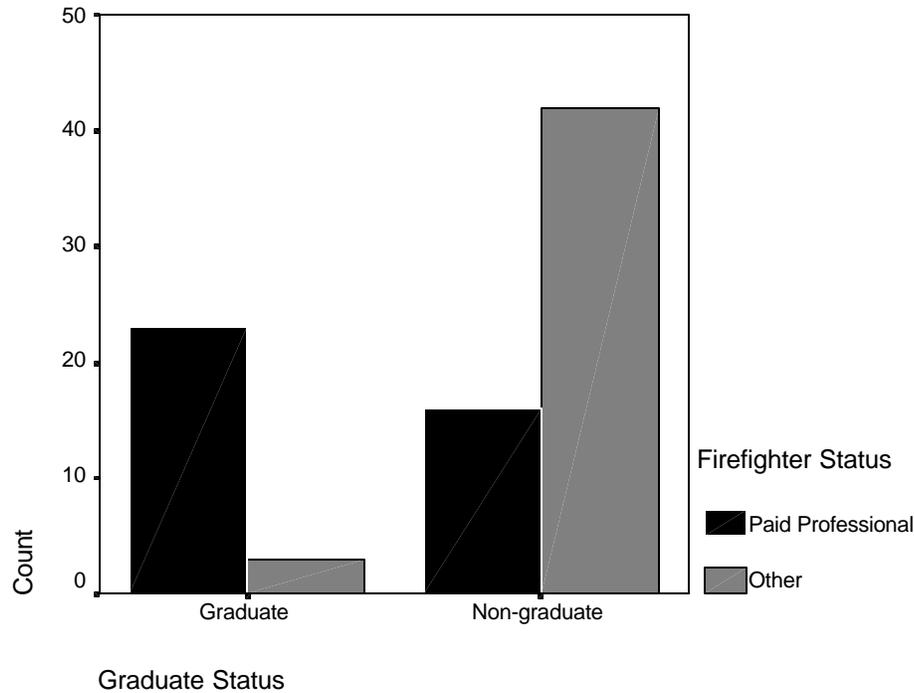
Figure 2. Graduate status ($\underline{N}$ = 84) cross-tabulated with firefighters status of paid professionals ($\underline{n}$ = 39) and all others ($\underline{n}$ = 45).

Incentives for Program Completion

The next set of analyses investigated respondents' perception of the effect increased incentives would have on student persistence in program completion. Because of differing motivations among survey groups, response groups were again coded by paid professionals and all others.

The first analysis looked at wage increases as a motivation in student persistence. Expectedly, paid professionals were found to consider money a greater motivational factor than other firefighters. Of professionals, 89% either agreed or strongly agreed that wage increase as

incentive would increase graduation rates. Of firefighters other than professionals, 65% agreed that

money is a motivation.

Survey responses to promotional consideration for education level as incentive for program

graduation followed the same pattern. Professional firefighters (91%) and other than paid

professionals (55%) reported that graduation rates would increase if they were given promotional

incentives.

A greater number of professional firefighters than others, for all types of incentive increases,

reported student persistence would also increase. The analysis of hiring preference, however,

showed a significant increase in agreeable response by the "all others" group. Of this group, 82%

agreed or strongly agreed that increased preference for education in hiring practices would increase

graduation rate of the program. Table 9 depicts the results of this analysis.

Table 9

Hiring Preference for Education: Effect on Student Persistence

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Firefighter Status * Hiring Preference Would Increase Graduation Rate	82	97.6%	2	2.4%	84	100.0%

Firefighter Status * Hiring Preference Would Increase Graduation Rate
Crosstabulation

			Hiring Preference Would Increase Graduation Rate				
			disagree	neither agree nor disagree	agree	strongly agree	Total
Firefighter Status	Paid Professional	Count		3	12	22	37
		% within Firefighter Status		8.1%	32.4%	59.5%	100.0%
	Other	Count	1	7	19	18	45
		% within Firefighter Status	2.2%	15.6%	42.2%	40.0%	100.0%
Total		Count	1	10	31	40	82
		% within Firefighter Status	1.2%	12.2%	37.8%	48.8%	100.0%

Education and Training Alternatives

Analyses of education and training alternatives to the AAS degree was by survey group. In response to the question of in house training meeting department training needs (N = 80), 69% of all respondents agreed or strongly agreed. Of inactive students (n =9) 89% agreed. Notable also, was that although 66% of graduates agreed, they represented the largest dissenting group with 23% disagreeing.

Analysis of the benefit of the Certificate of Proficiency program was also revealing of a pattern within the alternative education analyses, with the inactive students now most agreeable. Of active participants and inactive students, 62% and 80% respectively, agreed or strongly agreed the Certificate of Proficiency was of benefit to firefighters. Of graduates and chiefs, 52% and 50% respectively were agreeable.

Responses to OSFM certifications meeting department training needs and benefit of the

certification to firefighters followed this same pattern. In both these response categories 100% of

inactive students (n = 10) agreed. Chiefs were the second most agreeable group with 90%

professing the benefit of OSFM certifications.

In the analysis of OSFM certifications meeting department training requirements, all other

groups: participants (77%), graduates (77%), and chiefs (70%), responded agreeably.

When analysis of the viability of the OSFM certification as an alternative to the AAS

program was performed the pattern remained the same, however, chiefs (45%) and graduates

(47%) were not nearly as agreeable. Inactive students remained extremely agreeable of the value

of the OSFM certifications, nonetheless, with 90% proclaiming them a viable alternative to the

degree. The findings are illustrated in Table 10.

Table 10

Viability of OSFM Certifications as Alternative to the AAS Degree

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Survey Group * OSFM Certifications Are Viable Alternative To Degree	83	98.8%	1	1.2%	84	100.0%

Survey Group * OSFM Certifications Are Viable Alternative To Degree Crosstabulation

Count

		OSFM Certifications Are Viable Alternative To Degree					
		strongly disagree	disagree	neither agree nor disagree	agree	strongly agree	Total
Survey Group	Fire Chief		3	3	4	1	11
	Program Graduate		6	5	10		21
	Program Participant	1	5	10	19	6	41
	Inactive Student		1		7	2	10
Total		1	15	18	40	9	83

Satisfaction With the Fire Science Program

The next analysis determined satisfaction with the LCCC, Fire Science program. Responses to the survey question of whether LCCC was satisfactorily meeting the educational needs of the fire service community within its district were evaluated.

Results showed satisfaction with the LCCC program by all response groups. However, of inactive students, only 50% were satisfied with 30% neutral and 20% disagreeing. This represented the largest discordant group.

A simple frequency distribution was performed across all response groups and the picture of program satisfaction became much clearer. Overall satisfaction with the program (N = 83) was

favorable with 75% agreeing or strongly agreeing. These results are clarified in Table 11 and the

pie chart representation of Figure 3.

Table 11

Cross-tabulation of Program Satisfaction by Survey Group

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Survey Group * Satisfied With LCCC Program	83	98.8%	1	1.2%	84	100.0%

Survey Group * Satisfied With LCCC Program Crosstabulation

			Satisfied With LCCC Program					
			strongly disagree	disagree	neutral response	agree	strongly agree	Total
Survey Group	Fire Chief	Count		1	2	8		11
		% within Survey Group		9.1%	18.2%	72.7%		100.0%
	Program Graduate	Count		2	3	13	3	21
		% within Survey Group		9.5%	14.3%	61.9%	14.3%	100.0%
	Program Participant	Count	1	2	5	25	8	41
		% within Survey Group	2.4%	4.9%	12.2%	61.0%	19.5%	100.0%
	Inactive Student	Count		2	3	3	2	10
		% within Survey Group		20.0%	30.0%	30.0%	20.0%	100.0%
Total		Count	1	7	13	49	13	83
		% within Survey Group	1.2%	8.4%	15.7%	59.0%	15.7%	100.0%

Satisfied With LCCC Fire Science Program

strongly agree
15.5%

agree
58.3%

Missing
1.2%

strongly disagree
1.2%

disagree
8.3%

neutral response
15.5%
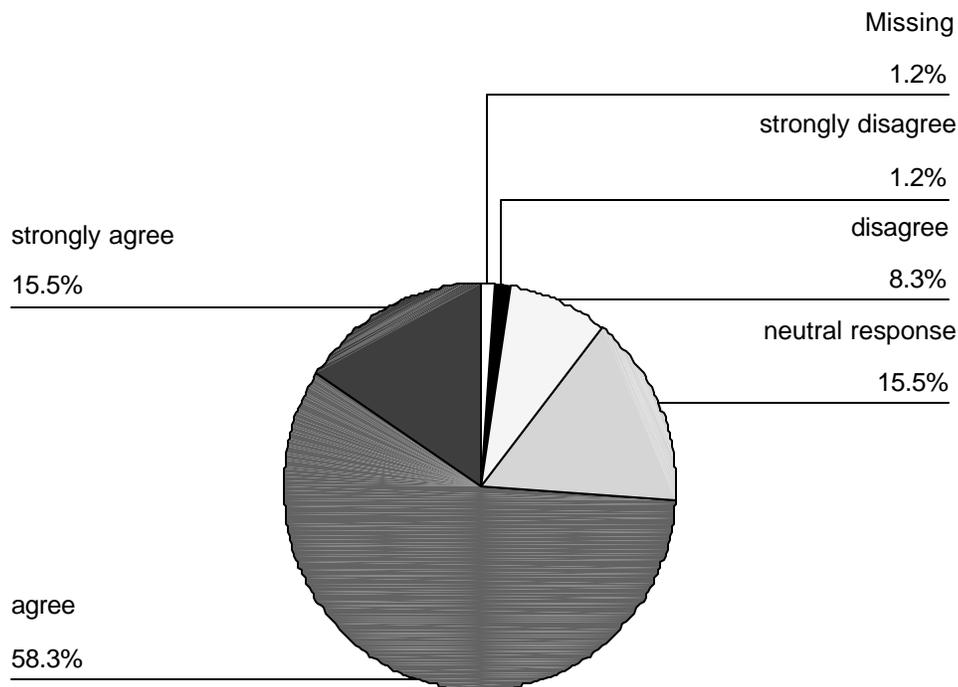
Figure 3. Frequency distribution of satisfaction with the LCCC program, all responses.

Fire Chiefs' Regard for Higher Education

Analyses of fire chiefs' regard for education began by determining the education level of the group. Although only 6 of the 11 chiefs (55%) in the group were holders of an AAS degree in Fire Science, 9 of 11 (82%) had 14 years or more of education, with 2 of 11 (18%) holding a bachelors degree or higher. Only 1 of the 11 did not have post high school education. The frequency distribution of these findings is included in Table 12.

Fire chiefs overall agreed there was benefit to the AAS degree. This information is also depicted in Table 12. Although not ascertainable from the table, interesting was the fact that the

single response of the degree being of no benefit was that of the only respondent with no post high

school education.

Table 12

Fire Chief Responses to Years of Personal Education and to Benefit of AAS Degree

Survey Group * Years of Education Crosstabulation

Count

		Years of Education						
		12	13	14	15	16	18	Total
Survey Group	Fire Chief	1	1	4	3	1	1	11
Total		1	1	4	3	1	1	11

Survey Group * Benefit of AAS degree Crosstabulation

Count

		Benefit of AAS degree				
		Not at all	Somewhat	Very	Extremely	Total
Survey Group	Fire Chief	1	1	5	4	11
Total		1	1	5	4	11

The next analysis correlated personal education and regard for higher education. Findings

are presented in Table 13. As can be seen, as a Chief's personal education increased, regard for

education was found to increase significantly: $\underline{r}$ = .537, $\underline{N}$ = 11, $\underline{p}$ < .05.

Table 13

Correlation of Chiefs' Personal Education and Regard for Education

**Correlation of Chiefs Education Level
and Regard for Higher Education**

		Benefit of AAS degree	Years of Education
Pearson Correlation	Benefit of AAS degree	1.000	.537*
	Years of Education	.537*	1.000
Sig. (1-tailed)	Benefit of AAS degree	.	.044
	Years of Education	.044	.
N	Benefit of AAS degree	11	11
	Years of Education	11	11

*. Correlation is significant at the 0.05 level (1-tailed).

Although respondents to the Chiefs survey overwhelmingly agreed the AAS degree was of benefit to their personnel, this high regard for education had little effect on department training requirements. Table 14 presents Fire Chiefs' frequency of response to required education and training with increasing levels of department hierarchy. With the exception of one department requiring the AAS degree for chief officers, no other department required a degree for any position.

Table 14

Fire Chief Responses to Departmental Training Requirements by Position Held in the Department

Survey Group * Firefighter Training Requirement Crosstabulation

Count

| | | Firefighter Training Requirement | | | |
		None	In House Training	OSFM Certified	Total
Survey Group	Fire Chief	1	6	4	11
Total		1	6	4	11

Survey Group * Department Training Requirement for Apparatus Operator Crosstabulation

Count

| | | Department Training Requirement for Apparatus Operator | | | |
		None	In House	OSFM Certified	Total
Survey Group	Fire Chief	2	7	2	11
Total		2	7	2	11

**Survey Group * Department Training Requirement for
Company Officer Crosstabulation**

Count

		Department Training Requirement for Company Officer			
		None	In House	OSFM Certified	Total
Survey Group	Fire Chief	4	5	2	11
Total		4	5	2	11

**Survey Group * Department Training Requirement for Chief
Officer Crosstabulation**

Count

		Department Training Requirement for Chief Officer				
		None	In House	OSFM Certified	AAS Degree	Total
Survey Group	Fire Chief	4	4	2	1	11
Total		4	4	2	1	11

The multivariate regression analysis of the effect of a Fire Chief's regard for education upon

departmental training requirements is displayed in Table 15. As could be predicted from the

information found in Table 14, the effects were not significant ($\underline{F}_{1,11}$=1.37, $\underline{p}$ = .796). Although

Chiefs strongly agreed as to benefit derived from the AAS degree, and further, disagreed that

alternative education could replace that benefit, it was not reflected in departmental education

requirements. In fact, within this group (N = 11) the confidence level approached 80% that there

was no reflection of regard for education in the departments required education. Furthermore, as

was clarified in Table 14, a requirement of the AAS degree was nearly non‑existent.

Table 15

Multivariate Regression Analysis of Fire Chiefs' Regard for Education Effect on Departmental

Education Requirements

ANCOVA [a,b]

			Unique Method				
			Sum of Squares	df	Mean Square	F	Sig.
Education Requirements for Advancement	Covariates	Chief's Education Level	6.426	1	6.426	1.368	.276
	Main Effects	Regard for Education	.335	1	.335	.071	.796
	Model		9.335	2	4.668	.994	.412
	Residual		37.574	8	4.697		
	Total		46.909	10	4.691		

a. Education Requirements for Advancement by Regard for Education with Chief's Education Level

b. All effects entered simultaneously

Career Enhancement Gained by Program Graduates

The analyses of career enhancement gained by AAS degree holders was performed by first

investigating if a correlation existed between program graduates and the rank they held. This

analysis was found to be statistically significant: $\underline{r} = -.438$, $\underline{N} = 81$, $\underline{p} < .01$.

Next in this analyses set was correlation between years of service and rank. If rank was to be the dependent variable for career enhancement basis, it was this researcher's opinion that longevity was an important variable in the analysis. Again, findings were significant with r = .831, N = 81, p <.01. These findings are illustrated in Figure 4.
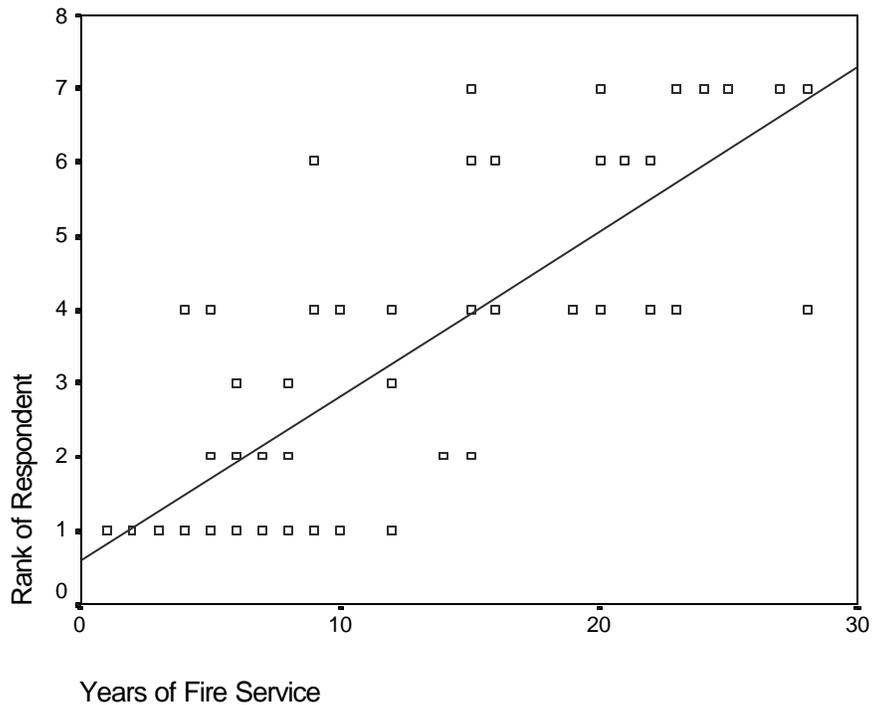
Figure 4. Scatter plot and regression line of correlation between years of fire service and rank of AAS degree holders.

A multivariate regression analysis of these variables showed that holding years of fire service constant and testing for the enhancement of career based on the rank of degree holders produced a striking contrast from the original result. The effect of holding a degree (on rank) while

taking years of service into account ($F_{2,80}$ = 125.8, p =.835) was not significant. The probability

of the rank of the graduate being chance occurrence was 83.5%. Table 16 depicts these results.

Table 16

Multivariate Regression Analysis of Degree Holder with Years Service: Effect on Rank

Cases					
Included		Excluded		Total	
N	Percent	N	Percent	N	Percent
81	96.4%	3	3.6%	84	100.0%

ANCOVA [a,b]

			Unique Method				
			Sum of Squares	df	Mean Square	F	Sig.
Rank of Respondent	Covariates	Years of Fire Service	197.640	1	197.640	125.817	.000
	Main Effects	Program Graduate	6.890E-02	1	6.890E-02	.044	.835
	Model		273.696	2	136.848	87.117	.000
	Residual		122.527	78	1.571		
	Total		396.222	80	4.953		

a. Rank of Respondent by Program Graduate with Years of Fire Service

b. All effects entered simultaneously

DISCUSSION

The purpose of this research was to find elemental factors underlying the low graduation

rate of the LCCC Fire Science program. In doing so the researcher sought to answer six

questions. Each is discussed, as previously introduced to the reader, in order of analyses performed in attempting to find the answers.

- 1) Who attends the LCCC Fire Science program and which students graduate?

Clearly the majority of students enrolled in the program are white male, non-traditional adult learners. This finding was consistent with the review of previous program evaluations (J. Sowders, personal communication, May 1997; FSBCC, et al., 1989). In contrast to literature reviewed however, LCCC was found to have a strong student base of other-than-professional firefighters. Although participatory figures revealed that many students were from volunteer fire departments, the findings were conclusive that the vast majority of graduates are paid professionals. This, also, was consistent with previous program evaluations reviewed.

None of the graduate respondents were female. The small percentage of women enrolled in the program came as no surprise to this author. In many areas of the country there are few women in the fire service. Southern Illinois is no exception. One need only look at the percentage of females (3.6%) among all response groups to come to this conclusion. Despite cultural diversification efforts, the fire service is still a white male dominated culture.

It was somewhat surprising to this researcher that so few minorities are enrolled in the LCCC program, and that further, only one graduate respondent was non-white. Again, this was thought to be reflective of the fire service having for so long been dominated by white males.

- 2) How would increased incentives for program graduates affect student persistence in completing an AAS degree?

Findings revealed that effects of incentives varied substantially by professional status of respondents. Not surprisingly, money was a prime motivation for the paid professionals, as was increased promotional consideration given graduates.

Although all response groups considered money and promotions incentives for academic persistence, hiring consideration being given to program graduates was the major motivating factor among those other than paid professionals. It was evident that hiring consideration would not only increase persistence among non-professional participants, but 100% of the inactive students also agreed it would increase graduation rates. The author considered this reverberate of research reviewed regarding adult learner motivation. Adult learners expect a fair exchange of gain for effort (Cini & Fritz, 1996; MacKinnon, 1994). A career field where no hiring preference is given to college degree holders is far to little exchange for a four year, part time, program commitment.

Surprisingly, although graduates were overwhelmingly paid-professionals, 57% of those other than professionals still believed that program graduation increased an entry level candidate's chance of being hired. Of inactive students, 60% believed this to be true, with only 10% in disagreement. These beliefs (or professed beliefs) were contradictory to findings of who actually graduates from the program. Although not investigated in this project, the author thought this certainly an area worth further study.

- 3) Do a) Fire service administrators and b) students of the fire sciences feel their educational needs can be met by alternatives to the AAS degree?

Responses to viability of alternatives to the AAS degree meeting education requirements were not at all surprising. Although fire service administrators and program graduates considered alternatives valuable, they were not agreeable (less than 50%) to their replacing the AAS degree.

Program participants and inactive students, on the other hand, thought they were an extremely viable alternative.

In regard to whether OSFM certifications met department educational needs, 100% of inactive students and 70% of fire service administrators agreed. Coupling these approval ratings with the fact that state certifications are vocationally oriented and are therefore more easily obtained, it could be concluded that OSFM certifications undermine the graduation rate of the AAS degree program. Strengthening this conclusion was the number of inactive students (90%) agreeing state certifications were a viable alternative to the AAS degree. Hilligoss (1992) found California community colleges had problems when curriculums were developed without reference to the guidelines of the State Fire Marshal's office. This study indicates the development of a program in close accordance with state guidelines is no assurance of it being non-problematic.

The question remains then...are these findings detrimental to the fire services of the LCCC educational district? Given the enrollment increases enjoyed by LCCC after program revision and OSFM certification offerings, perhaps this eventuality was of benefit. If the certification process provides for more highly educated firefighters and increased student persistence, it would be difficult to argue that this program was of no benefit.

It should be reiterated that neither administrators nor graduates considered alternative education a replacement for the AAS degree. Perhaps they felt as did Kirtley (1989) that a degree was necessary for advancement into managerial and administrative positions. However, this study disclosed that there is essentially no requirement for higher education in the LCCC fire service community at any level of its hierarchy. The posture of chiefs and graduates may reflect the fact that they are those who have achieved this education. This research found the LCCC educational

district chiefs were well educated as a group, and further, they considered education very important. Although not investigated by this project, it could be extrapolated that all firefighters' regard for education increases proportionally as their personal education rises.

Without some greater incentive for degree completion, it seems basic human nature to take the path of least resistance in one's career development, particularly in a student base made up largely of other than career firefighters. It is the opinion of this author, these findings lead back to the second research question regarding incentives for attainment of formal education. It is also indicative of the inter-relationship of the research questions chosen for investigation and their cumulative effect on the graduation rate of the program.

- 4) Are the LCCC educational district fire services satisfied with the Fire Science program?

Findings suggested conclusively that the LCCC district fire services consider the program to be satisfactorily meeting their needs. As illustrated in Figure 3, LCCC enjoys a 75% approval rating. This finding is corroborated by enrollment increases during this evaluation period as compared to the previous program evaluation. Enrollment increased by, and remains, 300% above figures published in the previous evaluation.

The current enrollment figures and satisfaction level indicate that the LCCC program is meeting its self-proclaimed dual purpose role also. Although few participants attain the AAS degree as a terminal goal in the program, approval ratings indicate it meets the modern role of the community college successfully (LCCC 1997, 1987; Diener, 1986; Vaughn, 1985; Hardin, 1974).

- 5) Is regard for higher education of LCCC educational district Fire Chiefs affected by personal education level and is this regard reflected in department training requirements?

A Fire Chief's regard for higher education was found to be significantly affected by personal education level. As personal education increased, so too, did regard for education. Furthermore, the Chiefs group was found to be well educated and hence professed most agreeably as to the benefits of an AAS degree. Surprising was that, with the exception of one department's chief officers, there was no degree requirement for any level of organizational advancement. Although regard for education was very high in the group, the fact is, this regard is not reflected in the education requirements of the LCCC district fire services.

This finding was considered by the researcher to be elementary in the cumulative reasons for the graduation rate of the AAS degree program being low. Although local fire administrators give high marks to the AAS degree, it simply is not a requirement. If fire administrators desire firefighters to be educated to the AAS degree level of proficiency, they must give the attainment of such more than lip service. At some stage in career advancement the degree must become a requirement.

- 6) Does program graduation enhance the career opportunities of members of the LCCC fire service community?

Holding an AAS degree was found to be very significant ($p<.01$), with no other influencing factors examined in regard to career enhancement. However, including years of service as a co-variate altered the implications dramatically. It became immediately apparent from this analysis that more than the AAS degree is effectual in regard to one's career development.

As stated by Clark (1993) the fire service has long been an experience based organization. It has historically emphasized longevity and experience during promotional processes. The analyses performed regarding career enhancement opportunity afforded degree holders reinforced

this perspective. Although it is the opinion of this author that the AAS degree is in fact beneficial to one's career, the profound effects of longevity obscured promotional benefits derived from education. A better designed survey instrument and improved definition of key variables might isolate the effect of education. This research failed to conclusively identify career enhancement of program graduates. It did, however, demonstrate the powerful effect of longevity over the effect of education.

RECOMMENDATIONS

As suggested in the literature review, the dropout rates in two year institutions of higher learning can be very misleading. Many students in these institutions pursue a goal other than a degree (Hanniford & Sagaria, 1994; Luckie & Bonham, 1991). The majority of Southern Illinois firefighters are volunteers. They participate in fire service education to become more proficient in a field other than their primary career. Although findings indicated they enroll with the degree as their initial intent, the fact is few graduate. It is some time after enrollment they lower their personal achievement goals, believed by this author to be reflective of the gain for effort argument reviewed in adult student motivation (Cini & Fritz, 1996; MacKinnon, 1994).

Although the graduation rate of the LCCC program seems low, it has historically been so. Enrollment figures and approval ratings of the participants may attest to the value and success of the program. This research found 75% of survey respondents to be satisfied with the LCCC program, with 16% choosing not to give an opinion. The disapproval rating, however, was less than 10% among all survey respondents. Still, the inactive student group disapproval rate was

20%. A follow-up survey keying on reasons for program dissatisfaction and inclusive of all inactive students in the LCCC data base is, therefore, recommended.

The author found the opinion of local fire chiefs perplexing. Only 47% considered OSFM certifications a viable alternative to the degree, yet they overwhelmingly considered both the LCCC and OSFM certifications of benefit to their firefighters. Although the certificates target only the vocational portion of the curriculum versus the academic, individual course requirements are the same for the certifications as for the degree. Supported by survey responses, it is this researcher's opinion an increase in graduation rate could be achieved by hiring considerations, promotional preferences, and salary increases being awarded for educational pursuit. Increased incentives and hiring considerations, however, are variables outside the control of LCCC. If fire administrators desire more graduates, the initiative must begin within the local fire service community.

This author recommends that an aggressive marketing campaign be developed for the Certificate of Proficiency program offered at LCCC. OSFM certifications for individual courses completed could culminate in the attainment of the LCCC certificate. The courses required for the Certificate of Proficiency are those most frequently enrolled in by volunteer firefighters. If marketing the LCCC Certificate of Proficiency gained it value-recognition and status among students, it would benefit LCCC and the local fire service. Pursuit of the LCCC certificate may well increase student retention while providing more highly educated firefighters.

Any alluring quality of the program that increases student retention and firefighter knowledge is of benefit. Although more graduates should be a goal of the program, given survey responses regarding incentives, this may be unrealistic. Ninety-one students have graduated in the 27 year history of the program, an average of 3.4 students per year. Better educated firefighters is

the primary purpose of the program. The LCCC and OSFM certifications provide the mechanism

by which this objective can be achieved.

It is recommended also that steps be taken to increase participation of minorities and

women in the Fire Science program. Dynamic changes are taking place in the available labor force

in our nation. Women and minorities are now, and will continue to be, the fastest growing segment

of the work force (Chemers, Oskamp, & Costanzo, 1995). The fire service must recognize this

fact and assume a proactive posture in taking advantage of the shift in labor demographics. The

advantages of cultural diversification in regard to customer responsiveness are believed by this

author to be many. However, this too, is left for future research.

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Appendix A

Timothy D. Spaulding
1118 State Street
Alton, IL   62002

Dear Chief,

I am an Assistant Chief on the Alton Fire Department in Alton, Illinois, and I am also a student. I am conducting an evaluation of the Fire Science program at Lewis and Clark Community College. It is an applied research project in partial fulfillment of a bachelor's degree at Greenville College and the Executive Fire Officer Program at the National Fire Academy. A program review is required by the State of Illinois every five years and is the subject of this research. I have full authorization of the institution to conduct the project.

Your department is located in the Lewis and Clark educational district. As such, perhaps you have firefighters who have participated, are now enrolled, or may attend the program in the future. This evaluation is for the purpose of identifying any intervention that may improve the quality of the program. Its purpose is improvement in the education of firefighters and prospective firefighters. I sincerely hope that you choose to participate.

Should you decide to participate and would care for a summary of the findings of this research, make note of your wishes and name of your department in the comment section of the survey. I will be happy to send you a brief of the research results.

Please find enclosed, the questionnaire and pre-addressed, postage-paid, return envelope. I ask that you take the time to help in this worthwhile study by completing and returning the survey. Thank you for your time and consideration.

Sincerely,

Timothy D. Spaulding

LCCC Fire Science Program Evaluation
Survey For Department Chiefs

Please help us to better meet the needs of Fire Science program participants here at LCCC by taking the time to accurately complete this survey. Please be assured all information will be held in strictest confidence. Return the survey in the enclosed postage paid envelope.   Thank you!

Please check the appropriate response as to how beneficial to your personnel you would rate the following:

	Extremely	Very	Somewhat	Not very	Not at all
1) OSFM Certifications					
2) Certificate of Proficiency					
3) AAS degree					

What minimum training standards are required by your department for the following:

	None	In house Training	OSFM certified	AAS degree
4) Firefighter				
5) Apparatus Operator				
6) Company Officer				
7) Chief Officer				

Please answer the following by placing a check in the response box that BEST describes your opinion.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
8) If my department offered more incentive for degree holders in the promotional process, more personnel would complete an AAS degree.					
9) Training certifications gained from the OSFM are a viable alternative to obtaining an AAS degree.					
10) OSFM certifications meets the training requirements of my department.					
11) Firefighter training done "in house" meets the training requirements of my department.					
12) Holders of an AAS degree are more likely to be hired as professional firefighters than others.					
13) Preference in hiring degree holders as career firefighters would increase AAS program participation.					
14) If my department offered more pay increases as incentive for degree holders, more personnel would complete a degree.					
15) My AAS degree has been a valuable asset to me in my fire service career.					
16) The Fire Science program at Lewis and Clark is satisfactorily meeting the needs of the fire service community it serves.					

What level of support will your department provide for employees educational pursuits   (please check all that apply).

	Illinois Fire Service Institute or OSFM certification training	Certificate of proficiency	AAS degree	Bachelor's degree or higher
17) Tuition reimbursement				
18) Book expense				
19) Pay incentive				
20) Work release for attendance				
Using these same categories, is consideration given for the following:				
21) Hiring new employees				
22) Promotional opportunities				

23) Are there any degree holders on your department? No_____   Yes_____ If yes, how many? _____

24) Years of education you have completed: less than 12   12   13   14   15   16   17   18   more

25) Gender: Male ____   Female ____

26) Age _____

27) Race: White__   Black__   Hispanic__   Asian__   Other__

28) Do you hold an AAS degree in Fire Science?   No ____   Yes ____   Year Obtained _____

29) Years in Fire Service _____

30) Type of Fire Department: Paid ____   Paid-on-Call ____   Volunteer ____   Combination ____

31) Size of Department: 0-15___   15-30___   30-45___   45-60___   60-75___   Over 75___

32) If you are a paid firefighter, what is your current annual salary? _____
                    (please help by including this very important information)

33) If you have any comments Chief, I would be interested in reading them. Please feel free to use the reverse side. If you disclose your department name and request, I will be glad to forward a brief of the findings of this research. I would like to have interviewed all Fire Chiefs in this project, however, I am sure you are familiar with time constraints...

Thank you for your time.

Appendix B

Timothy D. Spaulding
1118 State Street
Alton, IL   62002

Dear AAS Fire Science alumnus,

I am an Assistant Chief on the Alton Fire Department in Alton, Illinois, and I am also a student. I am conducting an evaluation of the Fire Science program at Lewis and Clark Community College. It is an applied research project in partial fulfillment of a bachelor's degree at Greenville College and the Executive Fire Officer Program at the National Fire Academy. A program review is required by the State of Illinois every five years and is the subject of this research. I have full authorization of the institution to conduct the project.

This evaluation is for the purpose of identifying any intervention that may improve the quality of the program. Its purpose is improvement in the education of firefighters and prospective firefighters. As an alumnus of the program, your opinions and experiences are extremely important to this research. I sincerely hope that you choose to participate.

If you are no longer active in the fire service, or have retired, please fill out those questions you feel are pertinent and give the rank last attained.

Please find enclosed, the questionnaire and pre-addressed, postage-paid, return envelope. I ask that you take a few minutes to help in this worthwhile study by completing and returning the survey as soon as possible. Thank you for your time and consideration.

Sincerely,

Timothy D. Spaulding

Fire Science Program Evaluation
Survey For Program Graduates

Please help us to better meet the needs of Fire Science program participants here at LCCC by taking the time to accurately complete this survey. Please be assured all information will be held in strictest confidence. Return the survey in the postage paid return envelope included as soon as possible.

Thank you!

Please check the appropriate response as to how beneficial to firefighters you would rate the following:

	Extremely	Very	Somewhat	Not very	Not at all
1) OSFM Certifications					
2) Certificate of Proficiency					
3) AAS degree					

What minimum training standards are required by your department for the following:

	None	In house training	OSFM certified	AAS degree
4) Firefighter				
5) Apparatus Operator				
6) Company Officer				
7) Chief Officer				

Please answer the following by placing a check in the response box that BEST describes your opinion.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
8) If my department offered more incentive for degree holders in the promotional process, more personnel would complete an AAS degree.					
9) Training certifications gained from the OSFM are a viable alternative to obtaining an AAS degree.					
10) OSFM certifications meets the training requirements of my department.					
11) Firefighter training done "in house" meets the training requirements of my department.					
12) Holders of an AAS degree are more likely to be hired as professional firefighters than others.					
13) Preference in hiring degree holders as career firefighters would increase AAS program participation.					
14) If my department offered more pay increases as incentive for degree holders, more personnel would complete a degree.					
15) My AAS degree has been a valuable asset to me in my fire service career.					
16) The Fire Science program at Lewis and Clark is satisfactorily meeting the needs of the fire service community it serves.					

What level of support will your department provide for employees educational pursuits   (please check all that apply).

	Illinois Fire Service Institute or OSFM certification training	Certificate of proficiency	AAS degree	Bachelor's degree or higher
17) Tuition reimbursement				
18) Book expense				
19) Pay incentive				
20) Work release for attendance				
Using these same categories, is consideration given for the following:				
21) Hiring new employees				
22) Promotional opportunities				

23) Years of education you have completed: less than 12   12   13   14   15   16   17   18   more

24) Gender: Male _____   Female _____

25) Age _____

26) Race: White __   Black __   Hispanic __   Asian __

           Other __

27) What year did you obtain your AAS degree? _____

28) Years in Fire Service _____

29) Type of Fire Department: Paid _____   Paid-on-Call _____   Volunteer _____   Combination _____

30) Size of Department: 0-15___   15-30___   30-45___   45-60___   60-75___   Over 75___

31) What is your current rank?

Firefighter _____   Engineer\Sergeant _____   Lieutenant _____   Captain _____

Deputy Chief _____   Assistant Chief _____   Fire Chief _____

32)   If you are a paid firefighter, what is your current annual salary? _____
                     (please help by including this very important information)

33)   Do you have any comments regarding the Fire Science program, or any comments in general? Please feel free to use the reverse side to make suggestions for improvement. Name of your department if you wish.
_____
_____

Appendix C

Timothy D. Spaulding
1118 State Street
Alton, Illinois   62002

Dear LCCC Fire Science student,

      I am an Assistant Chief on the Alton Fire Department in Alton, Illinois, and I am also a student. I am conducting an evaluation of the Fire Science program at Lewis and Clark Community College. It is an applied research project in partial fulfillment of a bachelor's degree at Greenville College and the Executive Fire Officer Program at the National Fire Academy. A program review is required by the State of Illinois every five years and is the subject of this research. I have full authorization of the institution to conduct the project.

      As a participant of the Fire Science program, your views are extremely important to this study. Perhaps there are things you dislike as well as like about the program, or the general state of fire service education in our area. This evaluation is for the purpose of identifying any intervention that may improve the quality of the program. Its purpose is improvement in the education of firefighters and prospective firefighters. I sincerely hope that you choose to participate.

      Please find enclosed, the questionnaire and pre-addressed, postage-paid, return envelope. I ask that you take the time to help in this worthwhile study by completing and returning the survey. Again, input of the participants will help develop the future of the program. Thank you for your time and consideration.

Sincerely,

Timothy D. Spaulding

Fire Science Program Evaluation
Survey For Program Participants

Please help us to better meet the needs of Fire Science program participants here at LCCC by taking the time to accurately complete this survey. Please be assured all information will be held in strictest confidence. Return the survey in the postage paid return envelope included as soon as possible.

Thank you!

1) Is it your intention to complete a degree in the Fire Science program? Yes _____ No _____ If no, what is your goal? _____

2) How many semesters have you been active in the program? _____

3) Are you currently in the fire service? No _____ Yes _____ If yes, Years of service? _____

Please answer the following by placing a check in the response box that BEST describes your opinion.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
4) If my department gave promotional preference to degree holders I would complete an AAS degree.					
5) Training certifications gained from the OSFM are a viable alternative to obtaining an AAS degree.					
6) OSFM certifications meet the training requirements of my department.					
7) Firefighter training done "in house" meets the training requirements of my department.					
8) Holders of an AAS degree are more likely to be hired as professional firefighters than others.					
9) If preference were given in hiring degree holders as career firefighters I would complete an AAS degree.					
10) If my department offered wage increases as incentive for degree holders, I would complete an AAS degree.					
11) I believe that completing the Fire Science degree would be valuable in enhancing my fire service career.					
12) The Fire Science program at Lewis and Clark is satisfactorily meeting the needs of the fire service community it serves.					

Please check the appropriate response as to how beneficial to firefighters you would rate the following:

	Extremely	Very	Somewhat	Not very	Not at all
13) OSFM Certifications					
14) Certificate of Proficiency					
15) AAS degree					

What minimum training standards are required by your department for the following:

	None	In house training	OSFM certified	AAS degree
16) Firefighter				
17) Apparatus Operator				
18) Company Officer				
19) Chief Officer				

What level of support will your department provide for employees educational pursuits (please check all that apply).

	Illinois Fire Service Institute or OSFM certification training	Certificate of proficiency	AAS degree	Bachelor's degree or higher
20) Tuition reimbursement				
21) Book expense				
22) Pay incentive				
23) Work release for attendance				
Using these same categories, is consideration given for the following:				
24) Hiring new employees				
25) Promotional opportunities				

26) Type of Fire Department: Paid ____   Paid-on-Call ____   Volunteer ____   Combination ____

27) Size of Department: 0-15___ 15-30___ 30-45___ 45-60___ 60-75___ Over 75___

28) What is your current rank?

Firefighter _____   Engineer\Sergeant _____   Lieutenant _____   Captain _____

Deputy Chief _____   Assistant Chief _____   Fire Chief _____

29) Years of education you have completed: less than 12   12   13   14   15   16   17   18   more

30) Gender: Male ____   Female ____

31) Age _____

32) Race: White __   Black __ Hispanic __   Asian __   Other __

33) If you are a paid firefighter, what is your current annual salary? _____
                    (please help by including this very important information)

34) Please feel free to comment on the reverse side regarding the Fire Science program, or any comments in general? Name of your department if you wish.

Appendix D

Timothy D. Spaulding
1118 State Street
Alton, IL   62002

Dear Inactive Fire Science Student,

I am interested in your opinions. You have been inactive in your student status for some time. I also am a student. At times, I too have been inactive for long periods of time. I am an Assistant Chief on the Alton Fire Department. Currently I am conducting a program evaluation of the Lewis and Clark Community College Fire Science program. This is an applied research project in partial fulfillment of a bachelor's degree from Greenville College and the Executive Fire Officer Program at the National Fire Academy. To complete this project, I need your help.

Your input to this study is very important. Without the input of inactive students the study will be of less value. This evaluation is for the purpose of identifying any intervention that may improve the quality of the program. Its purpose is improvement in the education of firefighters and prospective firefighters.

Please find enclosed, the questionnaire and pre-addressed, postage-paid, return envelope. I ask that you take a few minutes to help in this worthwhile study by completing and returning the survey as soon as possible. Some inactive students may never have worked as an emergency service provider. Although portions of the survey may not pertain to some individuals, I ask that you complete the relevant areas.

Please remember to return the survey as soon as possible. Thank you for your time and consideration.

Sincerely

Timothy D. Spaulding

Fire Science Program Evaluation
Survey for Inactive Students

Please help us to better meet the needs of Fire Science program participants here at LCCC by taking the time to accurately complete this survey. Please be assured all information will be held in strictest confidence. Return the survey in the enclosed postage-paid, pre-addressed envelope.   Thank you!

1) When did you last attend the Fire Science program?   _____

2) Do you plan to return in the future? No _____   Yes _____

3) Was your goal in entering the program something less than an AAS degree? No _____   Yes _____
If yes, what goal did you have? _____

How important were the following in ending your participation in the Fire Science program at LCCC?

	Very Important	Somewhat Important	Somewhat Unimportant	Very Unimportant	Not a Factor
4) Time restrictions					
5) Cost					
6) Family responsibilities					
7) Lack of child care					
8) Travel distance to classes					
9) Work schedule conflicts					

10) Are you currently active in the Fire Service?   Yes _____   No _____   If not, please answer those questions that are relevant to you.

Please answer the following by placing a check in the response box that BEST describes your opinion.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
11) If my department gave promotional preference to degree holders I would complete an AAS degree.					
12) Training certifications gained from the OSFM are a viable alternative to obtaining an AAS degree.					
13) OSFM certifications meet the training requirements of my department.					
14) Firefighter training done "in house" meets the training requirements of my department.					
15) Holders of an AAS degree are more likely to be hired as professional firefighters than others.					
16) If preference were given in hiring degree holders as career firefighters I would complete an AAS degree.					
17) If my department offered wage increases as incentive for degree holders, I would complete an AAS degree.					
18) I believe that completing the Fire Science degree would be valuable in enhancing my fire service career.					
19) The Fire Science program at Lewis and Clark is satisfactorily meeting the needs of the fire service community it serves.					

Please check the appropriate response as to how beneficial to firefighters you would rate the following:

	Extremely	Very	Somewhat	Not very	Not at all
20) OSFM Certifications					
21) Certificate of Proficiency					
22) AAS degree					

What minimum training standards are required by your department for the following:

	None	In house training	OSFM certified	AAS degree
23) Firefighter				
20) Apparatus Operator				
24) Company Officer				
25) Chief Officer				

What level of support will your department provide for firefighters' educational pursuits   (please check all that apply).

	Illinois Fire Service Institute or OSFM certification training	Certificate of proficiency	AAS degree	Bachelor's degree or higher
26) Tuition reimbursement				
27) Book expense				
28) Pay incentive				
29) Work release for attendance				
Using these same categories, is consideration given for the following:				
30) Hiring new employees				
31) Promotional opportunities				

32) Years of education completed: less than 12   12   13   14   15   16   17   18   18 or more

33) Gender: Male _____   Female _____

34) Age _____

35) Race: White __   Black __   Hispanic __   Asian __
        Other __

36) Years in Fire Service _____

37) Type of Fire Department: Paid _____   Paid-on-Call _____   Volunteer _____   Combination _____

38) Size of Department: 0-15___   15-30___   30-45___   45-60___   60-75___   Over 75___

39) What is your current rank?

Firefighter _____   Engineer\Sergeant _____   Lieutenant _____   Captain _____

Deputy Chief _____   Assistant Chief _____   Fire Chief _____